

CLAIMS:

What is claimed is:

1. A method for grit blasting slots in a silicon wafer, the method comprising, providing a silicon wafer having a first surface and a second surface, the first surface containing resistive, conductive and insulative layers defining individual semiconductor components, applying a first substantially permanent non-water soluble layer selected from silane, photoresist materials and a combination of a silane layer and a photoresist layer to the first surface of the wafer to provide a first substantially permanent layer thereon, applying a water-soluble protective material to the first layer to provide a second layer, grit blasting slots in the wafer corresponding to the individual semiconductor components, each of the slots extending from the second surface of the wafer through the wafer and through the first and second layers and subsequently, removing the water-soluble protective layer from the wafer.
2. The method of Claim 1 wherein the protective material comprises a water-soluble polyacrylamide.
3. The method of Claim 1 wherein the protective material is derived from a polyacrylamide material and the protective material is applied to a silane adhesion promoter layer as the first layer.
4. The method of Claim 1 comprising applying a silane adhesion promoter material to the first surface of the wafer before applying the protective material to the wafer.
5. The method of Claim 4 wherein the protective material comprises a polyacrylamide material.
6. The method of Claim 1 wherein the grit blasting step is conducted using a grit blast material selected from alumina and silicon carbide.
7. The method of Claim 1 wherein the first protective layer comprises a silane adhesion promoter layer and a photoresist layer and the protective layer comprises a polyacrylamide layer, further comprising substantially removing the polyacrylamide

layer subsequent to grit blasting to provide a wafer containing the silane layer and the
5 photoresist layer.

8. A silicon wafer made by the method of Claim 1 comprising a silicon substrate containing a first layer derived from a silane material and a photoresist material and a second layer comprising a polyacrylamide material.

9. A silicon wafer made by the method of Claim 1 comprising a silicon substrate containing a first layer derived from a photoresist material and a protective layer on the first layer derived from a polyacrylamide material.

10. The silicon wafer of Claim 1 wherein the first layer comprises a silane adhesion promoter material having a thickness ranging from about 4 to about 8 Ångstroms and the second layer comprises a polyacrylamide material having a thickness ranging from about 20 to about 25 microns.

11. The silicon wafer of Claim 1 wherein the first layer comprises a photoresist material having a thickness ranging from about 1 to about 10 microns and the second layer comprises a polyacrylamide material having a thickness ranging from about 20 to about 25 microns.

12. A method for making ink jet printheads containing a silicon substrate with an ink feed via grit blasted therein, the method comprising spin coating a substantially water-insoluble first material selected from the group consisting of a silane material, a photoresist material and a combination of silane material and photoresist on
5 a first surface of the silicon substrate wafer to provide a first layer, the first surface of the wafer containing resistive, conductive and insulative layers defining individual semiconductor components, spin coating onto the first layer a substantially water-soluble protective material to provide a second layer, grit blasting ink vias in the wafer from a second surface side thereof opposite the first surface, removing substantially all of the
10 second layer from the wafer, attaching nozzle plates to the chips to provide nozzle plate/chip assemblies, dicing the wafer to provide individual nozzle plate/chip assemblies, electrically connecting TAB circuits or flexible circuits to the nozzle

plate/chip assemblies and adhesively attaching the nozzle plate/chip assemblies and connected circuits to printhead bodies to provide ink jet printheads.

13. The method of Claim 12 wherein the grit blasting step is conducted using a grit blast material selected from alumina and silicon carbide.

14. The method of Claim 12 wherein the first layer comprises a photoresist layer and the second layer comprises a polyacrylamide layer applied to the photoresist layer.

15. The method of Claim 14 further comprising removing substantially all of the polyacrylamide layer after grit blasting the wafer.

16. The method of Claim 15 wherein the grit blasting step is conducted using a grit blast material selected from alumina and silicon carbide.

17. The method of Claim 12 wherein the first layer comprises a photoresist material having a thickness ranging from about 1 to about 10 microns.

18. The method of Claim 17 wherein the second layer has a thickness ranging from about 20 to about 25 microns.